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ABSTRACT

Using data from a national random sample of 16,685 high school seniors collected in 1972, 10 different grade average reporting systems were analyzed by means of a nonlinear least squares procedure. A grade conversion table was created by relating reported grade averages in all of the systems to common percentile ranks in class. It was suggested that the 10 systems are probably reducible to only four fundamentally different systems. (Author)

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CONVERSION OF HIGH SCHOOL GRADE AVERAGES REPORTED IN DIFFERENT SYSTEMS

Hunter M. Breland

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Educational Testing Service
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CONVERSION OF HIGH SCHOOL GRADE AVERAGES REPORTED IN DIFFERENT SYSTEMS

Hunter M. Breland

Educational Testing Service

Abstract

Using data from a national random sample of 16,685 high school seniors collected in 1972, 10 different grade average reporting systems were analyzed by means of a nonlinear least squares procedure. A grade conversion table was created by relating reported grade averages in all of the systems to common percentile ranks in class. It was suggested that the 10 systems are probably reducible to only 4 fundamentally different systems.

CONVERSION OF HIGH SCHOOL GRADE AVERAGES REPORTED IN DIFFERENT SYSTEMS[1]

Hunter M. Breland
Educational Testing Service

In American high schools, cumulative grade averages are reported in a variety of systems: letter-grade averages, grade-point averages, percentage averages, and in other less popular reporting systems. Within each of these systems, different forms and ranges occur. Letter-grades may range from A+ to F, A to F, A to D, etc., and there may or may not be signs (plus or minus) associated with the letters. Grade-point averages may range from 0 to 4, 1 to 4, 1 to 5, 1 to 7, or 5 (low) to 1 (high), for example. Percentage grading systems may use a scale extending from 0 to 100, 50 to 100, 70 to 100, or other ranges. When working with data involving these different systems, ranges, and forms, the problem often arises of converting from one system to another or of converting all of the systems to some common scale.

One approach to this problem is to use tables of grade equivalents. In such a conversion procedure grades are replaced by their equivalents as determined from the standard procedure for computing numerical averages from a number of letter-grades. That is, for example, A = 4.0, B = 3.0, C = 2.0, D = 1.0, and F = 0.0. An example of a conversion table is that used by the Law School Data Analysis Service (LSDAS, 1972) for college grades shown in Table 1. The objective, in this table, is to convert all of these different

Insert Table 1 about here

systems to one scale--that ranging from 0 to 4.0, on the left. Where the system is different from one of the three common systems on the right, no conversion is possible using this table.

There are a number of other difficulties with this kind of technique. First, there may be no basis for assuming that a signed letter grade with a plus or minus should place it one third of a unit higher or lower than the same grade without the sign (i.e., does B+ = 3.33?). Second, some schools do not use signed grades at all and the question arises as to whether their unsigned grades are the same as unsigned grades in schools who also have signed grades. Third, there is no way to know what the proper equivalents are in the percentage system, since a wide variety of percentage ranges exist for the same letter grade. Fourth, numerical grades in the 1 to 5 system may be reported as some average, a decimal figure lying in between the nominal values, resulting in a need for interpolation. Fifth, grades based on cumulative averages involve a regression to the mean making the standard conversion values, like those of Table 1, incorrect. That is, few students will have cumulative averages as high as 4.00 because some of their grades will be less. At the same time, however, these same students may be thought of as "A" students. At the low end of the scale, it is practically impossible that any student will have a cumulative average of 0.0, though there may be students considered as "F" students. Similarly, it is unlikely that a "D" student will have an average as low as 1.00. There is even a question of whether a C average is, on the average, equivalent to 2.0.

There is, of course, also the problem of the variation among schools in abilities. That is, an A at an "easy" school is not equivalent to an A at a "hard" school. While this is an important problem as evidenced by the large number of papers in the literature (e.g., Bloom & Peters,

1961; Hills, 1972; Lindquist, 1963; Tucker, 1963), it is not dealt with in this paper. Before such grade adjustments for ability variation among schools can be performed, it is necessary to convert reported grades to some common numerical system.

The development of such conversion procedures necessitates a large and random sample of students for whom extensive grade information is available. A large sample is necessary because of the variety of grade-reporting systems in use and the need for sufficient numbers of cases with each system. A national random sample is necessary because, if the conversions are to have generality, they must be unbiased with respect to some particular geographic region or type of school, for example.

Data

The National Longitudinal Study of the High School Class of 1972,[2] conducted for the U. S. Office of Education by Educational Testing Service, provides such a source of information. This study was based on a stratified two-stage probability sample. Schools were selected nationwide, with known probabilities by WESTAT Corporation, from universe listings of schools retained by the U. S. Office of Education, after stratifying the population by a set of eight variables: (1) public or nonpublic, (2) geographic region, (3) enrollment size class, (4) proximity to institutions of higher education, (5) percent minority, (6) income level of the community around the school, (7) school type, where Type A represents schools of low income or high minority classification and Type B represents all others, and (8) degree of urbanization. Altogether, 600 final strata were defined and Type A schools were selected at twice the sampling rate of Type B schools to produce a final sample of 1,200 schools--two from each final stratum.

Within each cooperating sample school, a random sample of students in grade 12 (or its equivalent) was taken by Educational Testing Service from lists of all such students provided by the school. Where possible, 18 students were selected. Occasionally, non-cooperating students or small school enrollments resulted in fewer than 18 students being included in the final sample.

A few kinds of schools and students were excluded from the study. Excluded schools consisted mostly of schools for physically or mentally handicapped students, schools for legally confined students, and schools which did not enroll students of their own (often Area Vocational Schools having students enrolled in other schools--the other schools were not excluded from sampling). Included schools were required to be within the 50 states and the District of Columbia. Students of excluded schools were not included in the study; students of excluded Area Vocational Schools were admitted to the sample through the school within which they were enrolled. Other excluded students consisted of early graduates, adult education students, and students who, in the view of their school, would be harmed by the experience of the project. The final count of students involved in the present study was 16,685 and these represented more than 1000 different high schools.

As part of a large body of information collected for these students and their schools, each of the participating schools were asked to provide, for each student selected, his or her rank in class, the total number of students in the class, a grade average, and a statement of the range of values involved in the grading system used. Missing data on one or more of the requested variables, the omission of uncommon grading systems and other similar

factors reduced the total number of cases involved to 11,678. The numbers of cases for each of 10 different grade reporting systems studied are shown in Table 2. Several other grading systems were also used, but the numbers of cases for them were so small as to make analyses of them impractical. These other

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Insert Table 2 about here

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forms of grading included pass-fail, satisfactory-unsatisfactory, and different ranges of grade-point averages.

Procedure

For those cases involving no missing data with respect to either rank in class or total number in class, it was possible to compute a percentile rank,

$$\%R = (1 - \frac{R}{N}) \times 100 ,$$

where R is the reported rank in class and N is the total number of students in the class of a given student. The value of %R thus obtained for each student was then used to relate grades received in one grading system with those in another.

As a first step, the first three grading systems of Table 1--the letter-grade systems--were investigated. It was of interest to determine whether, on the average, a grade received in one of these systems might be different (in terms of percentile rank) from the same grade in another. For each letter grade within each of the three letter-grading systems, the mean %R was computed and comparisons made of mean %R's for each letter grade. The

kind of question to be answered by this treatment is for example: In a grade-point average reporting system with a range from 0 to 4, what is the point estimate for a letter-grade average of B+?

A somewhat different treatment of the data was required to find equivalent percentile ranks for grading systems like those of systems 7-10 in Table 2. For these systems, a regression approach was used. Rather than assuming that the relationships would be linear, least squares solutions were attempted for polynomials up to degree three by equations of the form,

$$Y = a + b_1X + b_2X^2 + b_3X^3$$

where Y represents the grade averages to be estimated, X is the percentile rank (X = %R), and a and the b's are raw regression coefficients. The least squares solutions of such equations yield relationships which can be used to estimate numerical grade averages, given the percentile ranks in each grading system.

The regressions were performed in a step-wise manner such that those terms contributing most to the explanation of variance in Y were considered first. In other words, if X^3 correlated higher with Y than did either X or X^2, then its coefficient was computed first. The second variable considered was that having the highest correlation in the residual correlation matrix, the influence of the first considered variable having been removed as in normal procedures for selecting variables. This procedure was followed until all variables had been entered into the equation. When collinearities were so high as to prevent inversion, the step-wise procedure was stopped and the last-entered term dropped from the equation.

Results

The mean percentile ranks for each of the letter grades reported in each of the three letter-grade reporting systems (systems 1, 2, and 3 of Table 2) are given in Table 3. A comparison of the three systems suggests that letter

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Insert Table 3 about here

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grades are approximately equivalent, in terms of percentile rank, for each of the three letter-grade systems. That is, a grade of A represents about the 95th percentile in each, a grade of B about the 76th percentile, a grade of C about the 43rd percentile, and a grade of D about the 16th percentile. At the extremes, of course, where the number of cases used in computing the means is small, the means are less stable.

The polynomial regressions for the numerical grading systems (systems 7 through 10 in Table 2) resulted in the parameters shown in Table 4.

Insert Table 4 about here

Table 5 presents a comparison of the linear and nonlinear estimates. While the statistical tests provide evidence that the best fit to the points, in most cases, is a nonlinear one, the more important reason for the use of curvilinear fits is conversion at the extremes. For example, a linear fit would result in an A+ average being converted to a grade-point average of 3.54. But the nonlinear fit gives 3.76, which would seem more appropriate. The linear fit tends to suppress the conversion values at high extremes.

The curvilinear fit of the points should thus appear to be most appropriate for conversion purposes. The curvilinear fits are shown, graphically, in Figure 1.

Insert Figure 1 about here

Insert Table 5 about here

With the mean percentile ranks for each letter-grade average, and with the curvilinear relationships represented in Figure 1 and Table 5, a conversion table was constructed (Table 6). The %R values shown in Table 6 were derived

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Insert Table 6 about here

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by weighting each of the means of Table 3 by the number of cases associated with it. For each such derived mean %R and letter-grade combination, the equivalent value in the numerical systems is read from Figure 1 (or computed from the regression equations using the parameters of Table 5).[3] From Table 6, the point estimates of grade equivalents may be obtained.[4] For example, a letter-grade of C has an equivalent grade-point average estimate of 2.25 (in the 0 through 4 system) and, in the 50 through 100 percentage system, an equivalent percentage average point estimate of 77.3.

Discussion

The question arises, naturally, as to what degree the relationships of Figure 1 represent the true relationships being estimated. Some indication of the quality of fit is gained from the multiple correlations and standard

errors of estimate already presented in Table 4. The R values would suggest that the estimates are very good ones. Considering the standard errors at the %R of 43.5 (a C average), a grade-point average of 2.25 (in the 0 to 4 system) represents a scatter of points two-thirds of which probably lie between 2.01 and 2.49. For the 1 to 4 system, the range is between 1.95 and 2.45. Thus one might conclude that these systems are basically the same, despite the indications of a different minimum average. Actually, very few (about 1%) of the 4633 cases represented in the 0 to 4 system had reported averages below 1.0.

The same kind of argument could be made with respect to the 0 to 100 and 50 to 100 percentage systems. The standard error is about 4 percentage points, suggesting that the difference between 78.4 and 77.3 (at the 43.5 percentile) is unimportant. And since the curve for the 0 to 100 system is <u>above</u> that for the 50-100 system, there is little logic to the difference either. By contrast, the 70 to 100 system should logically have higher means--and it does.

Another useful observation (see Table 6) is that relating the 0 to 4, 1 to 5, and 5 to 1 systems. Considering the A+ equivalents, it is seen that in the 0 system it is 3.70 and in the 1 to 5 system it is 4.70. One suspects, therefore, that these systems are also the same, the difference being only one of absolute magnitude. The small differences at other percentile points could be attributed to random variation. For the 5 to 1 system, consider subtraction from 6 (for comparison with the 1 to 5) and from 5 (for comparison with the 0 to 4). At the F level, 6 -3.48 = 2.52, and this is comparable to the 2.51 figure of the 1 to 5 systems and, at the A+ level, 5 -1.25 = 3.75, which is very close to the 3.76 figure of the 1-4 system.

Accordingly, the 10 systems would appear to be reducible to only 4 systems: (i) the letter-grade average, (ii) the grade-point average, (iii) the 50 to 100 percentage system--since rarely is an average below 50 reported, and (iv) the 70 to 100 system.

Conclusion

Although a large number of grade reporting systems ostensibly exist, the evidence reported in the present paper suggests that most of these are no more than different interpretations of the same system. A grade-point system with a range from a low of 1 to a high of 5 appears to be equivalent to the familiar 0 to 4 system. Thus averages can be converted by adding or subtracting 1. A similar conversion can be made from the system with a low of 5 and a high of 1 by subtracting the average reported from 6 or 5. Even a system defined by a range from a low of 1 and a high of 4 appears to be essentially the same, since very few averages below 1 are reported and since the averages above 1 are very close for the same percentile rank in class.

Percentage systems are often differentiated in terms of range as well, but most often they are not significantly different. Where the range is specified from 50 or below to 100, it may be assumed that the systems are the same, since very few percentage averages below 50 are reported. However, if the range is specified as 70 to 100, this restriction in range substantially changes the meaning of a given percentage average.

Finally, even though letter-grade averages may be reported in a number of apparently different systems (with or without signs, without F's, etc.), the percentile ranks associated with each letter-grade average would appear to be consistent across letter systems. More extreme restriction of range, however, most probably would change the meanings of letter grades.

References

Bloom, B. S., & Peters, F. R. Academic prediction scales. New York: The Free Press of Glencoe, 1961.

Hills, J. R. Consistent college grading standards through equating. Educational and Psychological Measurement, 1972, 32, 137-146.

Law School Data Analysis Service. Law School Admission Bulletin 1972-73. Princeton, N. J.: Educational Testing Service, 1972.

Lindquist, E. F. An evaluation of a technique for scaling high school grades to improve predictions of college success. Educational and Psychological Measurement, 1963, 23, 623-646.

Tucker, L. R. Formal models for a central prediction system. Psychometric Monograph No. 10. Richmond, Va.: Wm. Byrd Press, 1963.

Footnotes

[1]The author is grateful to Cathleen Bower, David Saxe, and Ingeborg Stiebritz of Educational Testing Service for the computer programming requird in this study.

[2]Conducted for the U. S. Office of Education by Educational Testing Service, Princeton, N. J., under Contract #OEC-0-72-0903.

[3]Appendix I contains the values used in plotting Figure 1.

[4]Appendix II contains frequency distributions of cumulative grade averages in the different grading systems.

Table 1

LSDAS Grade Conversions

4.0 Scale	A+ to F	1 to 5	100 - 0
4.33	A+	1+	98 - 100
4.00	A	1	93 - 97
3.67	A-	1-	90 - 92
3.33	B+	2+	87 - 89
3.00	B	2	83 - 86
2.67	B-	2-	80 - 82
2.33	C+	3+	77 - 79
2.00	C	3	73 - 76
1.67	C-	3-	70 - 72
1.33	D+	4+	67 - 69
1.00	D	4	63 - 66
0.67	D-	4-	60 - 62
0.00	E & F	5	below 60

Table 2

Common Grade[a] Reporting Systems in the National Longitudinal Study

System Description	Number of Students
1. Letter grade, D through A, with signs	338
2. Letter grade, F through A, no signs	1202
3. Letter grade, F through A+, with signs	2076
4. Percentage grade, 0 through 100	1193
5. Percentage grade, 50 through 100	269
6. Percentage grade, 70 through 100	648
7. Grade-point average, 0 through 4	4633
8. Grade-point average, 1 through 4	1073
9. Grade-point average, 1 through 5	101
10. Grade-point average, 5 through 1	145
Total	11,678

[a]Average grades, as reported in the cumulative sense for a student's entire high school period, as distinguished from grades received in individual courses.

Table 3

Mean Percentile Ranks (M) for Letter-Grade

Averages in Different Grading Systems

Letter-Grade Average	Letter-Grade System[a]								
	1 D - A			2 F - A			3 F - A+		
	M	SD	N	M	SD	N	M	SD	N[b]
A+							99.7	.1	4
A	95.4	3.8	16	94.1	6.1	77	95.4	3.9	54
A-	89.9	7.5	7				92.9	5.3	59
B+	90.5	6.3	13				87.2	9.0	163
B	75.1	14.5	68	76.2	14.5	374	77.0	12.6	323
B-	58.7	12.1	28				64.6	13.6	155
C+	57.7	13.0	35				56.4	17.6	273
C	43.0	16.2	110	43.8	18.5	553	43.2	16.1	527
C-	31.6	21.1	17				25.3	12.8	152
D+	18.1	8.2	12				21.1	14.3	142
D	15.8	11.1	28	15.7	13.0	192	15.5	12.8	196
D-	23.9	37.7	4				6.5	7.6	20
F				10.7	7.3	6	.5	.1	2

[a]Identification numbers 1 through 3 are those of Table 1.

[b]Number of students

Table 4

Parameters for Regressions of Numerical

Grade Averages on Percentile Rank[a]

	Numerical Grade-Reporting System	Means				Standard Deviations				Standardized Partial Regression Coefficients[b]		
		$\bar{Y}$	$\bar{X}_1$	$\bar{X}_2$	$\bar{X}_3$	s_y	s_{x_1}	s_{x_2}	s_{x_3}	b_1^*	b_2^*	b_3^*
4.	0 through 100	80.97	52.26	3,502	262,008	7.169	27.77	2,932	280,898	.4113	.4175	.0000
5.	50 through 100	79.58	50.05	3,315	249,272	7.341	28.46	3,019	289,335	.3964	.4954	.0000
6.	70 through 100	83.29	51.60	3,458	258,519	5.988	28.21	2,936	280,254	.7401	.0000	.1821
7.	0 through 4	2.516	53.46	3,646	276,342	.6832	28.07	2,988	287,757	.7389	.0000	.2108
8.	1 through 4	2.469	52.16	3,496	262,080	.6864	27.85	2,954	284,330	.6735	.0000	.2753
9.	1 through 5	3.474	54.34	3,795	295.464	.7641	29.03	2,706	257,655	.6086	.0000	.3004
10.	5 through 1	2.487	53.95	3,566	259,160	.6278	25.59	3,178	311,455	-.7757	.0000	-.2042

[a] For equations of the form: $\hat{Y} = \bar{Y} + s_y \left[\frac{b_1^*}{s_{x_1}}(X_1 - \bar{X}_1) + \frac{b_2^*}{s_{x_2}}(X_2 - \bar{X}_2) + \frac{b_3^*}{s_{x_2}}(X_3 - \bar{X}_3) \right]$

[b] Standardized partial regression coefficients of zero indicate that the terms associated with them were dropped from the regression equation because of near-singularities in the matrices to be inverted.

Table 5

Comparison of Linear and

Nonlinear Models[a]

	Grading System	R_c	R_1	SE	$\underline{t}$	df
4.	0 through 100	.8226	.8165	4.081	6.07*	1190
5.	50 through 100	.8857	.8808	3.428	3.26*	266
6.	70 through 100	.9098	.9068	2.492	4.48*	645
7.	0 through 4	.9368	.9333	.239	15.84*	4630
8.	1 through 4	.9328	.9264	.248	9.88*	1070
9.	1 through 5	.8943	.8873	.347	2.48	98
10.	5 through 1	.8857	.8808	.343	3.81*	145

[a]Symbols are identified as:

R_1 - Multiple correlation for linear model

R_c - Multiple correlation for curvilinear model

SE - Standard error of the estimate (curvilinear model)

*$p < .01$

Table 6

Estimated Cumulative Grade Equivalents
for Eight Reporting Systems

Letter-Grade Average[a]	%R[b]	Non-Letter Grading System[c] Averages						
		4	5	6	7	8	9	10
		0-100	50-100	70-100	0-4	1-4	1-5	5-1
A+	99.7	92.6	92.6	93.7	3.70	3.76	4.70	1.25
A	94.3	91.0	90.8	92.3	3.53	3.57	4.51	1.43
A-	87.9	89.1	88.7	90.6	3.34	3.34	4.29	1.63
B+	87.2	88.9	88.5	90.4	3.32	3.32	4.26	1.65
B	76.5	85.9	85.3	87.9	3.02	3.00	3.94	1.96
B-	63.8	82.8	81.9	85.2	2.69	2.65	3.60	2.29
C+	56.6	81.1	80.1	83.8	2.52	2.49	3.42	2.47
C	43.5	78.4	77.3	81.4	2.25	2.20	3.14	2.77
C-	25.9	75.3	73.9	78.3	1.89	1.86	2.81	3.14
D+	20.8	74.5	73.1	77.5	1.80	1.77	2.72	3.24
D	15.6	73.7	72.4	76.7	1.70	1.69	2.63	3.34
D-	9.4	72.9	71.5	75.7	1.59	1.59	2.53	3.46
F	8.1	72.7	71.4	75.5	1.56	1.56	2.51	3.48

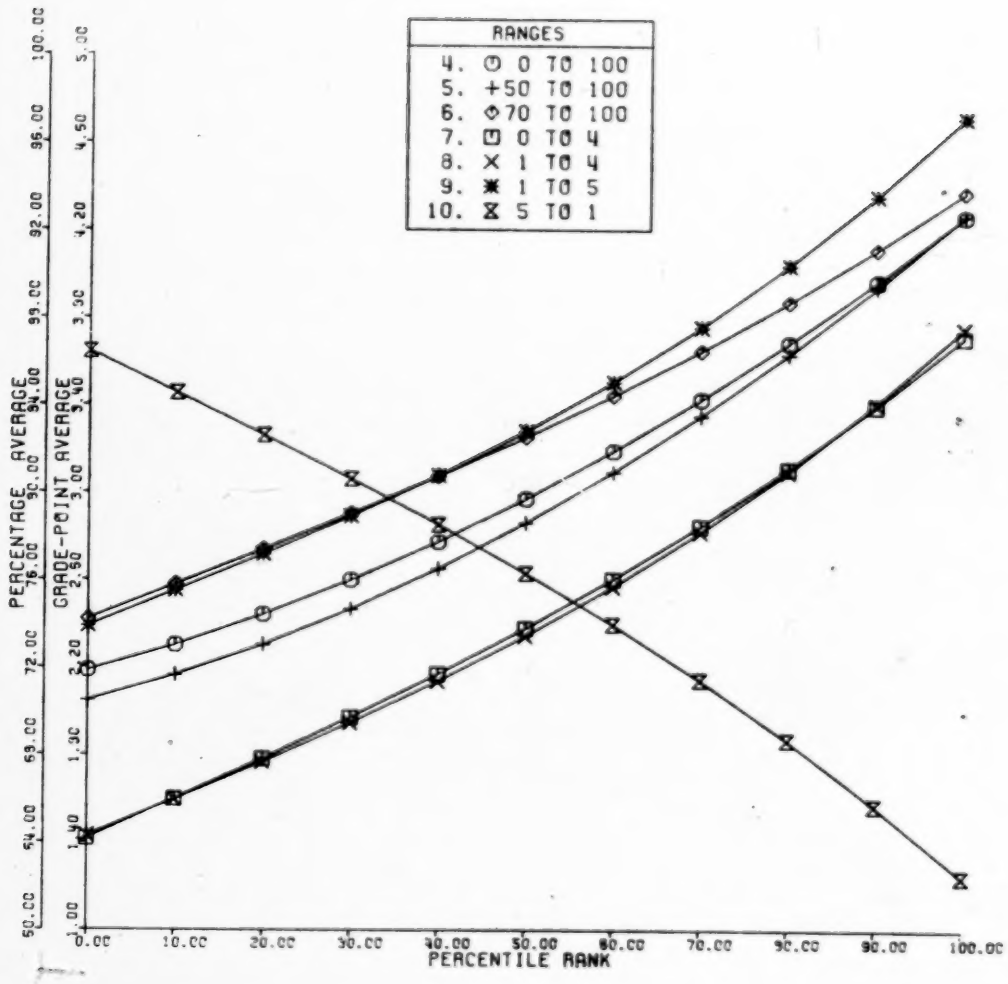
[a] Systems 1, 2, and 3 of Table 1.

[b] Weighted means derived from Table 2.

[c] Identification numbers 4 through 10 are those of Table 1.

Figure Caption

Figure 1. Plot of formulae for the curvilinear regression of Reported Grade Averages on Percentile Rank for Seven Numerical Grading Systems.


RANGES
4. 0 TO 100
5. +50 TO 100
6. 70 TO 100
7. 0 TO 4
8. 1 TO 4
9. 1 TO 5
10. 5 TO 1
PERCENTAGE AVERAGE
GRADE-POINT AVERAGE
PERCENTILE RANK
0.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
80.00
90.00
100.00

APPENDIX I

Table of Values for

Curvilinear Regressions of Grade Averages

on Percentile Rank in

Seven Numerical Grading Systems

	Numerical System						
%R	4 0-100 N=1193	5 50-100 N=269	6 70-100 N-648	7 0-4 N=4633	8 1-4 N=1073	9 1-5 N=101	10 5-1 N=145
0	71.8459	70.4691	74.1775	1.4167	1.4276	2.3868	3.6422
10	73.0098	71.6120	75.7524	1.5971	1.5943	2.5477	3.4514
20	74.3779	72.9959	77.3506	1.7804	1.7649	2.7130	3.2576
30	75.9501	74.6207	78.9955	1.9698	1.9437	2.8871	3.0579
40	77.7265	76.4865	80.7104	2.1681	2.1344	3.0743	2.8493
50	79.7071	78.5932	82.5186	2.3785	2.3413	3.2790	2.6288
60	81.8919	80.9408	84.4436	2.6038	2.5683	3.5056	2.3935
70	84.2809	83.5294	86.5086	2.8471	2.8193	3.7585	2.1403
80	86.8740	86.3569	88.7370	3.1115	3.0986	4.0421	1.8664
90	89.6714	89.4294	91.1521	3.3998	3.4100	4.3607	1.5686
100	92.6729	92.7408	93.7773	3.7152	3.7575	4.7187	1.2442

APPENDIX II

Tables of Frequency Distributions in

Ten Grading Systems

TABLE II - 1

Letter-Grade Average Reporting Systems
with a Range from D- to A and Signs (except A+)

Letter-Grade Average Reported	Frequency (N)	Per Cent
A	16	4.8
A-	7	2.1
B+	13	3.8
B	68	20.0
B-	28	8.3
C+	35	10.3
C	110	32.6
C-	17	5.0
D+	12	3.5
D	28	8.3
D-	4	1.2
	338	99.9

TABLE II - 2

Letter-Grade Average Reporting Systems

with a Range from F to A and No Signs

Letter-Grade Average Reported	Frequency (N)	Per Cent
A	77	6.4
B	374	31.1
C	553	46.0
D	192	16.0
F	6	.5
	1202	100.0

TABLE II - 3

Letter-Grade Reporting Systems
with a Range from F to A+ and
all Signs (except F- and F+)

Letter-Grade Average Reported	Frequency (N)	Per Cent
A+	4	.2
A	54	2.6
A-	59	2.9
B+	163	7.9
B	323	15.6
B-	155	7.5
C+	273	13.2
C	527	25.4
C-	152	7.3
D+	142	6.8
D	196	9.5
D-	20	1.0
F	2	.1
	2070	100.0

TABLE II - 4

Percentage Reporting Systems

with a Range from 0 to 100

Interval of Reported Percentage Averages	Frequency (N)	Per Cent
97.5 - 100.0	3	0.3
92.5 - 97.5	72	6.0
87.5 - 92.5	143	12.0
82.5 - 87.5	277	23.2
77.5 - 82.5	299	25.1
72.5 - 77.5	261	21.9
67.5 - 72.5	101	8.5
62.5 - 67.5	31	2.6
57.5 - 62.5	6	.5
	1193	100.1

TABLE II - 5

Percentage Reporting Systems

with a Range from 50 to 100

Interval of Reported Percentage Averages	Frequency (N)	Per Cent
97.5 - 100.0	1	0.4
92.5 - 97.5	11	4.1
87.5 - 92.5	36	13.4
82.5 - 87.5	43	16.0
77.5 - 82.5	54	20.1
72.5 - 77.5	80	29.7
67.5 - 72.5	36	13.4
67.5 - 67.5	6	2.2
57.5 - 62.5	2	0.7
	269	100.0

TABLE II - 6

Percentage Reporting Systems
with a Range from 70 to 100

Interval of Reported Percentage Averages	Frequency (N)	Per Cent
97.5 - 100.0	1	0.2
92.5 - 97.5	42	6.5
87.5 - 92.5	123	19.0
82.5 - 87.5	178	27.5
77.5 - 82.5	190	29.3
72.5 - 77.5	92	14.2
70.0 - 72.5	22	3.4
	648	100.1

TABLE II - 7

Grade-Point Reporting Systems

with a Range from 0.0 to 4.0

Interval of Reported Grade-Point Averages	Frequency (N)	Per Cent
3.9 - 4.0	60	1.3
3.7 - 3.9	135	2.9
3.5 - 3.7	208	4.5
3.3 - 3.5	293	6.3
3.1 - 3.3	316	6.8
2.9 - 3.1	377	8.1
2.7 - 2.9	406	8.8
2.5 - 2.7	489	10.6
2.3 - 2.5	477	10.3
2.1 - 2.3	493	10.6
1.9 - 2.1	447	9.6
1.7 - 1.9	367	7.9
1.5 - 1.7	241	5.2
1.3 - 1.5	176	3.8
1.1 - 1.3	92	2.0
.9 - 1.1	41	0.9
.7 - .9	15	0.3
	4633	99.9

TABLE II - 8

Grade-Point Reporting Systems

with a Range from 1.0 to 4.0

Interval of Reported Grade-Point Averages	Frequency (N)	Per Cent
3.9 - 4.0	14	1.3
3.7 - 3.9	31	2.9
3.5 - 3.7	49	4.6
3.3 - 3.5	51	4.8
3.1 - 3.3	65	6.1
2.9 - 3.1	81	7.5
2.7 - 2.9	92	8.6
2.5 - 2.7	107	10.0
2.3 - 2.5	96	8.9
2.1 - 2.3	131	12.2
1.9 - 2.1	117	10.9
1.7 - 1.9	89	8.3
1.5 - 1.7	73	6.8
1.3 - 1.5	39	3.6
1.1 - 1.3	25	2.3
1.0 - 1.1	13	1.2
	1073	100.0

TABLE II - 9

Grade-Point Average Systems

with a Range from 1.0 (low) to 5.0 (high)

Interval of Reported Grade-Point Averages	Frequency (N)	Per Cent
4.9 - 5.0	2	2.0
4.7 - 4.9	3	3.0
4.5 - 4.7	7	6.9
4.3 - 4.5	5	5.0
4.1 - 4.3	5	5.0
3.9 - 4.1	10	9.9
3.7 - 3.9	8	7.9
3.5 - 3.7	6	5.9
3.3 - 3.5	9	8.9
3.1 - 3.3	14	13.9
2.9 - 3.1	8	7.9
2.7 - 2.9	7	6.9
2.5 - 2.7	7	6.9
2.3 - 2.5	4	4.0
2.1 - 2.3	3	3.0
1.9 - 2.1	1	1.0
1.7 - 1.9	1	1.0
1.5 - 1.7	1	1.0
	101	100.1

TABLE II - 10

Grade-Point Systems with a Range
from 5.0 (low) to 1.0 (high)

Interval of Reported Grade-Point Averages	Frequency (N)	Per Cent
1.0 - 1.1	2	1.4
1.1 - 1.3	4	2.8
1.3 - 1.5	4	2.8
1.5 - 1.7	8	5.5
1.7 - 1.9	8	5.5
1.9 - 2.1	12	8.3
2.1 - 2.3	17	11.7
2.3 - 2.5	18	12.4
2.5 - 2.7	20	13.8
2.7 - 2.9	17	11.7
2.9 - 3.1	12	8.3
3.1 - 3.3	10	6.9
3.3 - 3.5	3	2.1
3.5 - 3.7	5	3.4
3.7 - 3.9	4	2.8
3.9 - 4.1	1	0.7
	145	100.1